

## CLAIMS

1. A system for counting the number of layers of a multilayer object, comprising:

5        oscillation means for emitting an electromagnetic wave to strike either the top surface or the bottom surface of a multilayer object;

         reception means for receiving electromagnetic waves generated by reflection of the electromagnetic  
10 wave at the interfaces of the layers of the multilayer object; and

         processing means for counting the number of layers of the multilayer object on the basis of signals of the reflected electromagnetic waves  
15 obtained by said reception means.

2. The system according to claim 1, wherein said oscillation means operates as means for oscillating an electromagnetic pulse and said processing means is adapted to count the number of  
20 electromagnetic pulses received by said reception means and operates as means for counting the number of layers of the multilayer object on the basis of the counted number of electromagnetic pulses.

3. The system according to claim 1, wherein  
25 said oscillation means operates as means for oscillating a continuous electromagnetic wave and said processing means is adapted to detect a phase

shift received by said reception means and operates as means for counting the number of layers of the multilayer object on the basis of the detected phase shift.

5           4.     The system according to claim 1, further comprising:

              a second reception means for receiving an  
electromagnetic wave generated by transmission of the  
electromagnetic wave through the multilayer object  
10     and a second processing means for detecting a phase  
shift of the transmitted wave relative to the  
electromagnetic wave before striking the multilayer  
object and counting the number of layers of the  
multilayer object on the basis of the detected phase  
15     shift.

              5.     The system according to claim 4,  
characterized in that

              said oscillation means operates as means for  
oscillating an electromagnetic pulse, and said second  
20     reception means has processing means for detecting a  
delay time of the transmitted wave relative to the  
electromagnetic wave that is detected when the  
multilayer object does not exist and counting the  
number of layers of the multilayer object on the  
25     basis of the detected delay time.

              6.     A system for counting the number of layers  
of a multilayer object, comprising:

oscillation means for emitting an electromagnetic wave to strike either the top surface or the bottom surface of a multilayer object;

reception means for receiving an  
5 electromagnetic wave generated by transmission of the electromagnetic wave through the layers of the multilayer object; and

processing means for detecting a phase shift of the transmitted wave relative to the electromagnetic  
10 wave before striking the electromagnetic object and counting the number of layers of the multilayer object on the basis of the phase shift.

7. The system according to claim 6, wherein said oscillation means operates as means for  
15 oscillating an electromagnetic pulse, and said reception means has processing means for detecting a delay time of the transmitted wave relative to an electromagnetic wave that is detected when the multilayer object does not exist and counting the  
20 number of layers of the multilayer object on the basis of the detected delay time.

8. The system according to claim 4 or 6, further comprising:

dividing means for dividing the electromagnetic  
25 wave emitted from said oscillation means into a first electromagnetic wave for striking the multilayer object and a second electromagnetic wave to be

propagated directly to said reception means or said second reception means.

9. The system according to claim 1, further comprising:

5 propagation means for propagating the electromagnetic wave emitted from said oscillation means through a propagation route getting to said reception means.

10 10. The system according to claim 4, comprising:

at least one or more than one oscillation means, one or more than one reception means, one or more than one second reception means, one or more than one processing means and one or more than one propagation  
15 means so as to count the number of layers at a plurality of positions at least at the side of the top surface or the bottom surface of the multilayer object.

11. The system according to claim 1, wherein  
20 the electromagnetic wave oscillated by said oscillation means contains a component having a frequency in a range from 30 GHz to 100 THz.

12. A method for counting the number of layers of a multilayer object, comprising:

25 an oscillation step of emitting an electromagnetic wave to strike either the top surface or the bottom surface of a multilayer object;

a reception step of receiving electromagnetic waves generated by reflection of the electromagnetic wave at the interfaces of the layers of the multilayer object; and

- 5           a processing step of counting the number of layers of the multilayer object on the basis of signals of the reflected electromagnetic waves obtained by said reception step.

- 10           13. The method according to claim 12, wherein the electromagnetic wave oscillated in said oscillation step contains a component having a frequency in a range from 30 GHz to 100 THz.